

REMARKS

The Examiner's Action mailed on May 5, 2004, has been received and its contents carefully considered.

In this Amendment, Applicant has canceled claims 2 and 3, amended claim 1 and added claim 10. Further, the abstract has been replaced, the title of the invention has been amended, and editorial changes have been made to the specification. Claim 1 is the independent claim, and claims 1 and 4-10 are pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

The Examiner's Action has objected to the title of the invention as being non-descriptive. In response thereto, the title has been amended in a manner that is believed to be clearly indicative of the invention to which the claims are directed. It is requested that this objection be withdrawn.

The Examiner's Action has also objected to the abstract of the disclosure for various informalities. In response thereto, submitted concurrently with this amendment is a revised abstract, which is believed to comply with all official provisions. It is requested that this objection be withdrawn.

The Examiner's Action has also objected to claim 1 for an informality. In response thereto, this informality has been corrected. It is requested that this objection be withdrawn.

The Examiner's Action has rejected claims 1 and 4 as being anticipated by *Park et al.* (USP 6,331,469). It is submitted that these claims are *prima facie* patentably distinguishable over the cited reference for at least the following reasons.

Applicant's independent claim 1 is directed to a method of fabricating a semiconductor device having trenches. The method includes depositing a third insulating film by filling a third insulating film into each trench up to a height to cover a second insulating film. A second oxide film forming step is performed through the third insulating film and after the third insulating film is deposited, and which includes subjecting the semiconductor substrate at a cornered portion of each trench to thermal oxidation to form a second oxide film. After the second oxide film forming step, a planarizing step is performed which includes polishing and planarizing the third insulating film so as to expose the second insulating film. This claimed operation overcomes the disadvantages of the prior art methods, as discussed on pages 1-3 of Applicant's specification, and has the advantages as discussed on pages 11 and 12 of Applicant's specification. This claimed method is neither disclosed nor suggested by the cited reference.

Park et al. disclose a trench isolation structure and a method of making the same, which includes, *inter alia*, forming trenches 47 within a substrate 40, and depositing an oxide film 48 within the trenches 47. Thereafter, an oxide film 52 is formed to fill the trenches 47, followed by the planarization of the oxide film 52, as

discussed in column 6, lines 26 through 30 of this reference. After the oxide film 52 is planarized, this reference discloses forming a gate oxide film 54 by thermal oxidation on the surface of the substrate 40.

However, and in contrast to the present invention, this reference does not disclose or otherwise suggest performing a second oxide film forming step through a third insulating film as recited by Applicant's independent claim 1. The Examiner's Action has equated the oxide film 52 which fills the trenches as being a third insulating film. However, this oxide film 52 is disposed adjacent to gate oxide film 54, and thus is not in a position to allow the gate oxide film 54 to be formed through the oxide film 52, as would be required by Applicant's independent claim 1.

Moreover, this reference does not disclose or suggest a planarizing step that is performed after a second oxide film forming step which includes polishing and planarizing the third insulating film, as recited claim 1. Instead, this reference discloses planarizing the oxide film 52 before the formation of the gate oxide film 54. As such, it is submitted that Applicant's independent claim 1 and dependent claim 4 are *prima facie* patentably distinguishable over the cited reference. It is requested that these claims be allowed, and it is further requested that these rejections be withdrawn.

The Examiner's Action has also rejected claims 1 and 4-6 as being anticipated by *Lee et al.* (USP 6,500,726). It is submitted that these claims are *prima facie* patentably distinguishable over this cited reference for at least the following reasons.

Lee et al. disclose a shallow trench isolation type semiconductor device and a method of forming the same, which includes, *inter alia*, depositing an isolation layer 41 within a trench, and planarizing the isolation layer 41, as discussed in column 7, lines 6 through 17 of this patent. After the isolation layer 41 is planarized, this reference discloses forming a buffer insulating film 51 as shown in figure 14 and as discussed in column 8, lines 2 through 6.

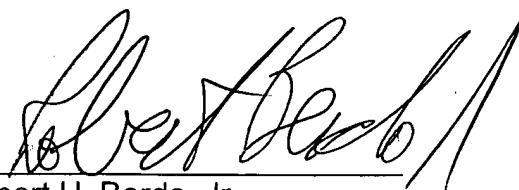
However, and similar to the above-noted deficiencies of *Park et al.*, *Lee et al.* likewise fail to disclose or otherwise suggest performing a second oxide film forming step through a third insulating film, as recited by claim 1. Moreover, this reference also fails to disclose or otherwise suggest a planarizing step which includes polishing and planarizing the third insulating film, and which is performed after the second oxide film forming step, as recited by claim 1. As such, it is submitted that Applicant's independent claim 1, and dependent claims 4-6 are *prima facie* patentably distinguishable over this cited reference. It is requested that these rejections be withdrawn and it is further requested that these claims be allowed.

The Examiner's Action has also rejected claims 5-9 as being obvious over *Park et al.* in view of *Watanabe* (USP 6,417,073), and has rejected claims 7-9 as being obvious over *Lee et al.* in view of *Watanabe*. Because claims 5-9 depend from independent claim 1, and because *Watanabe* does not overcome the above-noted deficiencies of either *Park et al.* or *Lee et al.*, it is submitted that claims 5-9 are *prima facie* patentably distinguishable over the cited combinations of references for at least the same reasons as independent claim 1, from which claim these dependant claims respectively depend. It is thus requested that these rejections be withdrawn and that these claims be allowed.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of the application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Respectfully submitted,



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AMENDMENT

10/635,506



ABSTRACT OF THE DISCLOSURE

--A silicon substrate at a first cornered portion of each trench is subjected to a thermal oxidation after a silicon oxide film is deposited in such a manner that the silicon oxide film is filled inside each trench formed in a silicon substrate up to the height to cover a silicon nitride film, thereby forming a silicon oxide film at the first cornered portion and also forming a rounded fresh second cornered portion.--